DETAILED ACTION

Claims 1-14 are pending in this application.

Examiner's Comments

Objected claims 7 and 9 were corrected appropriately.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-5 and 10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (JP 06-075105) in view of Zhou et al. (USPG Pub No. 2005/0036738).

Regarding claim 1, Umemoto et al. discloses a flat microlens (see figure 1, paragraph 0024, lines 2-3) wherein: said microlens is formed using a single transparent film (1) (abstract); said film (1) includes a region with graded refractive indices (abstract). Umemoto et al. discloses the claimed invention except for DLC film and when a light beam passes through said region with graded refractive indices, said light beam is focused. In the same field of endeavor, Zhou et al. discloses DLC film and when a light beam passes through said region with graded refractive indices, said light beam is focused (paragraph 0057, lines 6-8, 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film and when a light beam passes through said

region with graded refractive indices, said light beam is focused of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 2, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on a first main surface of said film (paragraph 0025); and said lens region includes a convex lens formed from said first main surface and a surrounding boundary surface corresponding to part of a roughly spherical surface (paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 3, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said first main surface to correspond with each of said microlenses (see figure 1, paragraph 0010); and said lens region has a shape of a columnar convex lens formed from said first main surface surrounded by a boundary surface corresponding to a part of a roughly cylindrical surface with a central axis parallel to said main surface (see figure 1, abstract, paragraph 0024, lines 2-3).

Regarding claim 4, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said film corresponding to each of said microlenses (paragraph 0005); said lens region has a roughly cylindrical shape that

passes completely through said film (see figure 1, paragraph 0024, lines 2-3); and a central axis of said cylindrical shape is perpendicular to said film (see figure 1), with higher refractive indices near said central axis (see figures 7, paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 5, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said film corresponding to each of said microlenses (paragraph 0005); and refractive indices are higher near a plane passing through a midpoint of a width axis of said band-shaped region and perpendicular to said film (see figures 7-9, paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film and lens region is a band-shaped region passing completely through said DLC film. In the same field of endeavor, Zhou et al. discloses DLC film and lens region is a band-shaped region passing completely through said DLC film (see figure 8, paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 10, Umemoto et al. discloses wherein said microlens can act as a lens for light containing wavelengths in a range from 0.4 microns to 2.0 microns (paragraph 0017, line 6).

Regarding claim 11, Umemoto et al. discloses a flat microlens (see figure 1, paragraph 0024, lines 2-3). Umemoto et al. discloses the claimed invention except for a method wherein said DLC film is formed using plasma CVD. In the same field of endeavor, Zhou et al. discloses a method wherein said DLC film (paragraph 0057, line 17) is formed using plasma CVD (paragraph 0009, line 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with a method wherein said DLC film is formed using plasma CVD of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 12, Umemoto et al. discloses index can be formed by increasing refractive index through application of an energy beam to said film (paragraph 0007). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 13, Umemoto et al. discloses wherein said energy beam application can include ultraviolet radiation, X-ray radiation, synchrotron radiation, ion beam radiation, and electron beam radiation (paragraph 0017, line 7).

Regarding claim 14, Umemoto et al. discloses wherein a plurality of microlenses arranged in an array on a single film is formed simultaneously by applying an energy beam (paragraph 0007). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Claims **6-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (JP 06-075105) in view of Zhou et al. (USPG Pub No. 2005/0036738) as applied to claim 1 above, and further in view of Johnson et al. (USP No. 5,442,482).

Regarding claim 6, Umemoto et al. discloses said film includes a plurality of concentric band-shaped ring regions (see figures 1, 8); Umemoto et al. discloses the claimed invention except for DLC film, refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a distance from a center of said concentric circles increases. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a distance from a center of said concentric circles increases (see figure 8, col. 13, lines 18-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a distance from a center of said concentric circles increases of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 7, Umemoto et al. discloses inner regions have higher refractive indices than outer regions (paragraph 0025); and corresponding regions in different zones have identical refractive indices (see figures 7-9). Umemoto et al. discloses the claimed invention except for DLC film includes M number of concentric ring zones, each of said ring zones containing N number of band-shaped ring regions. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses film includes M number of concentric ring zones, each of said ring zones containing N number of band-shaped ring regions (see figure 8, col. 13, lines 20-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with film includes M number of concentric ring zones, each of said ring zones containing N number of band-shaped ring regions of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 8, Umemoto et al. discloses the claimed invention except for said DLC film includes a plurality of parallel band-shaped regions; refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped regions act as a diffraction grating; and a width of said band-shaped region decreases as a distance from a predetermined band- shaped region increases. In the same field of endeavor, Zhou et al. discloses DLC film includes a plurality of parallel band-shaped regions (see figure 8, paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film includes a plurality of parallel band-shaped regions of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses refractive indices of said band-shaped

regions are graded relative to each other so that said band-shaped regions act as a diffraction grating, and a width of said band-shaped region decrease as a distance from a predetermined band-shaped region increases (see figure 8, col. 13, lines 18-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped regions act as a diffraction grating, and a width of said band-shaped region decrease as a distance from a predetermined band-shaped region increases of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 9, Umemoto et al. discloses regions closer to said predetermined region have higher refractive indices than regions that are further away (paragraph 0025); and corresponding regions in different zones have identical refractive indices (see figures 7-9). Umemoto et al. discloses the claimed invention except for DLC film includes M number of concentric band zones, each of said band zones containing N number of band-shaped regions. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses film includes M number of concentric band zones, each of said band zones containing N

number of band-shaped regions (see figure 8, col. 13, lines 20-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with film includes M number of concentric band zones, each of said band zones containing N number of band-shaped regions of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Response to Arguments

Applicant's arguments filed 07/23/2008 have been fully considered but they are not persuasive.

Applicant argues that a single transparent DLC film is not taught in the combination of the references. Umemoto teaches a layer (1) as is shown in figure 1. In addition, Zhou et al. teaches in paragraph 0056 that "structures other than alternating layers of two materials could be used....grains or dots of one material are embedded in another material...wires of one material can be embedded into another material..." Thus, teaching that one layer maybe used wherein the at least one material could be DLC as disclosed in paragraph 0057.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHIDERE S. SAHLE whose telephone number is (571)270-3329. The examiner can normally be reached on Monday thru Thursday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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MSS
10/27/2008

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